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ABSTRACT

Courses taken for the bachelor's degrees are examined for specific majors and overall fields of study (i.e., education, humanities, social sciences, quantitative fields, and business). Analyses are based on college transcripts of 4,440 participants in the National Longitudinal Study of the High School Class of 1972. Majors in quantitative fields and the humanities took 60% of their coursework in their major fields; social science majors took 50%; business majors, 33.3%; and education majors, 30%. At least half of the credits earned by all baccalaureate students were in general education courses. The following average number of credits were earned to fulfill bachelor degree requirements in the different fields; 129 credits by graduates in quantitative fields, 125 credits by humanitites majors, 122 credits by social science majors, 126 credits by business majors, and 130 credits by education majors. Included are tabular data on the average number and percent of credits for specific courses taken for bachelor's degrees by students' major field of study. Differences among graduates with specific majors are also examined. (SW)

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Curricular Content of Bachelor's Degrees

Studies of undergraduate education show baccalaureate curricula have become increasingly specialized. Career preparation has received more emphasis and the general education component has been weakened.[1] This report is about the courses or content of bachelor's degrees. Courses for a baccalaureate generally fall in one of three categories: major field of study, general education, and electives. For this report, the major fields of study examined are: education, humanities,[2] social sciences,[3] quantitative fields,[4] and business.[5] Analyses are based on college transcripts of participants in the Center for Education Statistics' National Longitudinal Surveys of the High School Class of 1972 (NLS-72) who earned a baccalaureate by December 1984. See appendix for more information.

The proportion of credits earned in a major field of study was substantial for all baccalaureates, but significantly higher for some fields of study than others. Majors in quantitative fields and the humanities took 60 percent of their coursework in their major fields, social science majors took 50 percent, business majors, 35 percent, and education majors, 31 percent. In quantitative fields, humanities, and social sciences, the number of credits are inflated because lower-level courses in these areas serve as general education requirements and are taken by most students. In fact, at least half of the credits earned by all baccalaureate students were in general education courses.[6] In most cases, baccalaureate students took no more than 15 percent of their credits in electives (chart 1).

Majors in Quantitative Fields

Graduates from the High School Class of 1972 who subsequently obtained bachelor's degrees in quantitative fields of study earned an average of 129 credits to fulfill degree requirements. An average of 61 percent of courses were taken in the degree field and related courses (79 credits). Students also took 15 percent of their credits in humanities (19 credits) and 12 percent in social sciences (16 credits). English courses were 42 percent of the humanities credits earned (8 credits).

[1] For example, see: Eva C. Galambos, "The Search for General Education: the Pendulum Swings Back," *Issues in Higher Education*, Number 15 (1979); Frederick Rudolph, et al, *Integrity in the College Curriculum: A Report to the Academic Community*, Washington, D.C., Association of American Colleges, 1985.

[2] English, foreign languages, philosophy, theology, visual arts, and performing arts.

[3] Social services, psychology, libraries, area and ethnic studies, and law.

[4] Mathematics, engineering, computer science, life sciences, and physical sciences.

[5] Business, management, marketing, and distribution.

[6] Under this classification, general education courses are: mathematics, English, social sciences, life sciences, physical sciences, computer science, and foreign languages. If a course was both a general education course and in an individual's major field, classification as a major field course took precedence.

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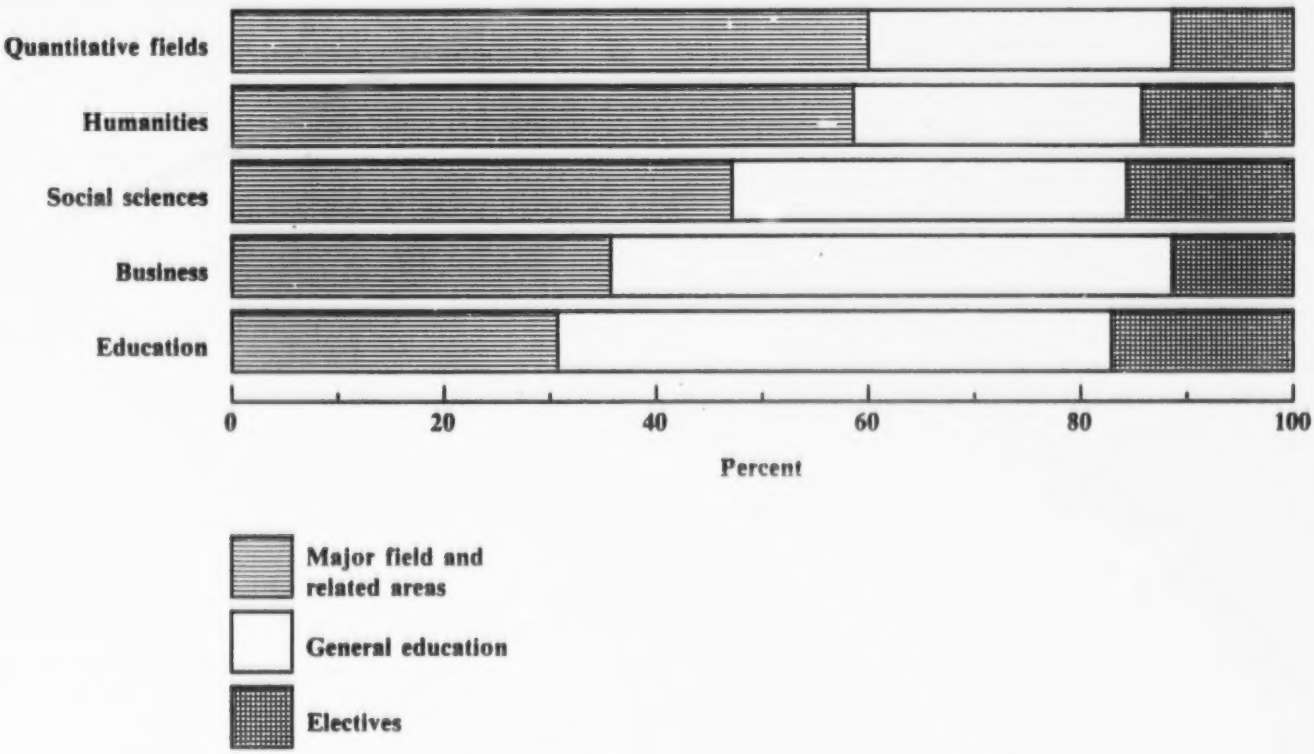
Chart 1.—Percentage distribution of credits for bachelor's degrees, by major fields of study, general education and electives.



However, English courses average just 6 percent of total credits (table 1).

There were distinct curricular differences among major fields in the quantitative fields. Engineering majors earned more credits and followed a more concentrated curriculum than did majors in mathematics and the sciences. Graduates with engineering degrees earned 137 credits, compared with 128 credits for mathematics majors, and 126 credits for science majors. The proportion of credits earned in a major field and related areas was 69 percent for engineering majors, about 60 percent for physical science and life science majors, and 51 percent for mathematics majors. In fact, engineering majors earned an average of two-thirds of their credits in three subject areas: engineering (52 credits), physical sciences (20 credits), and mathematics (19 credits) (table 2).

As a result, engineering majors took fewer credit courses outside their major and related areas. Though mathematics and science majors averaged 16 to 22 percent of their credits in humanities courses, engineering majors took only 9 percent in the humanities. However, mathematics and science majors averaged about 5 percent of their credits in foreign language courses (6 credits), but engineering majors took an average of only 1 percent of their credits in foreign languages (1 credit). Also, while mathematics majors took an average of 9 percent of credits in English courses (11 credits), engineering majors averaged 5 percent in English courses (7 credits). Further, though the differences were not marked, engineering majors took fewer credits in unrelated science courses (13 credits), compared with mathematics and science majors (17 credits) (table 2).

Majors in Humanities

Humanities majors earned an average of 125 credits for their bachelor's degrees. For most, 60 percent of the coursework were humanities courses (75 credits) and 18 percent were social science courses (22 credits). Humanities majors took 8 percent of their credits in mathematics and related quantitative fields courses (10 credits) (table 1).

Graduates with degrees in English earned a third of their credits in their major (40 credits). Other humanities courses were 20 percent of their credits (25 credits). The average English major earned 22 percent of their credits in social science courses (27 credits), and 9 percent in mathematics and sciences (11 credits) (table 2).

Foreign language majors earned 38 percent of their credits in their major (47 credits). Foreign language majors averaged 11 percent of credits in English courses (14 credits), 18 percent in social science courses (22 credits), and 10 percent in quantitative fields courses (12 credits).

Majors in Social Science

Social science majors earned an average of 122 credits for their undergraduate degree. Fifty percent of their credits were in social science courses (59 credits). Another 25 percent were in humanities courses (28 credits), and 13 percent were in mathematics and science courses (15 credits) (table 1).

Majors in Business

Graduates receiving baccalaureates in business, management, and marketing earned an average of 126 credits in undergraduate courses. A third of this total was in their major field (44 credits), and 54 percent were in general education courses (68 credits) (table 1).

Business majors earned more credits in social sciences than did majors in education, humanities, or quantitative fields. Social science was the largest general education area in their course of studies. Business majors took about 25 percent of their credits in social sciences (30 credits). They also earned twice as many mathematics credits as did majors in the humanities or social sciences (table 1).

Except for majors in quantitative fields, business majors earned more credits in computer courses than did majors in other fields (2 credits). Though the number of credits is small, it exceeded the average of a half credit or less earned by majors in other fields (table 1).

Majors in Education

Graduates with degrees in education earned an average of 130 credits. This is more than the average number of credits earned by majors in humanities, social sciences, or business (table 1). Thirty percent of the credits earned by education majors were in education courses (40 credits). About half of their curriculum (70 credits) comprised courses in general education. This may reflect the fact that education majors specialize in a general education area they intend to teach.

Specifically, education majors took 23 percent of their credits in humanities (30 credits), and nearly half of these were in English courses (14 credits). Thus, they earned more English credits than did those who majored in business, the social sciences, or quantitative fields.

Courses in the social sciences composed 19 percent of the curriculum (24 credits) for education majors. Another 12 percent were in mathematics (5 credits), life sciences (6 credits), and physical sciences (5 credits) (table 1).

Education courses were not the exclusive domain of education majors. Graduates in mathematics took an average of 8 credits and English and foreign language majors, 6 credits in education courses (table 2).

Technical Notes

Data Source

The data in this report were from the Postsecondary School Transcripts Study, conducted by the Center for Education Statistics as a supplement to the National Longitudinal Study of the High School Class of 1972 (NLS-72). The transcript study was designed to obtain reliable and objective information about the postsecondary education experiences of NLS-72 sample members.

Approximately 15,000 members of the NLS-72 sample reported attending one or more postsecondary institutions by 1980. Based on this information, transcript requests were made to about 4,300 schools, including public two-year and four-year institutions, private nonvocational and private vocational schools, and foreign or unclassified schools.

Only transcripts of students who received bachelor's degrees by December 1984 were examined. Of the 4,791 transcripts for sample members, about 6 percent were dropped from the study because of incomplete or missing data or because the schools were foreign or unclassified. Another 1 percent of the transcripts were dropped because data contained out-of-range values. The result was an analysis sample of 4,440 baccalaureate graduates.

To make semester and quarter credits equivalent, it was assumed that bachelor's degrees under a semester system required about 120 credits and under a quarter system, about 180 credits. A factor of 0.67 (that is, 120/180) was applied to all credits earned under a quarter system, for a uniform measure in semester hour credits.

Classification Variables

To determine the number of credits earned in general education courses, the following categories were aggregated:

Mathematics,
life sciences,
physical sciences,
computers,
foreign languages,
English, and
social sciences.

Grouping of Majors into Broad Fields of Study

Fields of Study	Majors
Quantitative	Computer sciences, engineering, life sciences, mathematics, and physical sciences
Humanities	Foreign languages, English, philosophy, theology, visual arts and performing arts
Social sciences	Area and ethnic studies, law, libraries, psychology, and social science
Business	Business and management, marketing, and distribution
Education	Education
Other academic	Architecture and environmental design, communications, allied health, health sciences, general studies, military sciences, military technology, multi/interdisciplinary studies, protective services, and public affairs.
Personal development	Consumer, personal, and miscellaneous services, basic skills, citizenship/civic activities, interpersonal skills, leisure and recreational activities, and personal awareness
Academic vocational	Agricultural sciences, renewable natural resources, home economics, industrial arts, and parks and recreation
Vocationally-oriented	Agribusiness and agricultural production, business and office, communications technology, engineering technology, vocational home economics, science technologies, construction trades, mechanics and repairers, precision production, and transportation and materials moving

Precision of Estimates

The data in this report are estimates derived from 4,440 transcripts from the NLS sample members who completed a bachelor's degree. The sample estimates were inflated to be nationally representative of baccalaureates from the High School Class of 1972. The data represent only those who completed their bachelor's degree; not all those who attended a postsecondary education institution.

The sample mean and an estimate of its standard error permit construction of interval estimates with a prescribed confidence that the interval includes the average result of all possible samples. This assumes all possible samples were selected in such a way that each was surveyed under essentially the same conditions. Then if a sample mean and its estimated standard error are calculated for each sample:

A. Approximately two-thirds of the intervals from one standard error below the estimate to one standard error above the estimate will include the average value of all possible samples.
B. Approximately 95 percent of the intervals from two standard errors below the estimate to two standard errors above the estimate will include the average value of all possible samples.

Group differences cited in the text are statistically significant at the 95 percent confidence level. Table 3 provides the standard errors for the means shown in table 1 and table 2.

For More Information

This report was prepared by Susan Hill, Center for Education Statistics; and Maria Owings, under contract to the Center. For more information on the transcript study, contact Dennis Carroll, Center for Education Statistics, Longitudinal Studies Branch, 555 New Jersey Avenue NW., Washington, D.C. 20208, (202) 626-9120.

Table 1.—Average number and percent of course credits taken for bachelor's degrees, by students' major field of study

Courses	Total	Student's major field of study									
		Quantitative	Humanities	Social science	Business	Education	Other academic	Personal development	Academic Vocational	Vocationally oriented	Unclassified
		(Number of credits)									
Total[1]	127	129	124	122	127	130	126	137	129	132	124
Quantitative, total	28	79	10	16	20	16	26	14	31	29	29
Mathematics	7	16	3	5	10	5	5	3	5	8	8
Life sciences	8	17	3	4	3	6	11	8	13	5	8
Physical sciences	9	28	4	5	5	5	10	3	11	10	9
Engineering	3	16	(2)	(2)	(2)	(2)	(2)	(2)	1	5	3
Computers	1	3	(2)	1	2	(2)	(2)	(2)	1	1	1
Humanities, total	29	19	75	28	18	30	25	28	18	22	30
Foreign languages	5	5	13	6	2	3	4	3	2	2	4
English	12	8	22	11	10	14	11	13	10	10	11
Philosophy	3	3	7	5	2	2	3	3	1	2	4
Theology	1	1	4	1	(2)	1	1	2	(2)	(2)	3
Arts	8	3	29	5	3	10	6	7	5	8	8
Social sciences	30	16	22	59	30	24	27	26	20	21	26
Business	9	1	1	3	44	1	2	4	4	9	10
Education	9	2	5	4	1	40	3	15	4	5	5
Other	22	12	11	12	14	19	43	50	52	46	24
		(In percent)									
Total	100	100	100	100	100	100	100	100	100	100	100
Quantitative, total	22	61	8	13	16	12	21	10	24	22	23
Mathematics	6	13	2	4	8	4	4	2	5	6	6
Life sciences	6	13	3	4	2	4	9	6	10	4	6
Physical sciences	7	21	3	4	4	4	8	2	8	7	7
Engineering	2	12	(2)	(2)	(2)	(2)	(2)	(2)	1	4	2
Computers	1	2	(2)	1	2	(2)	(2)	(2)	(2)	1	1
Humanities, total	23	15	60	23	14	23	19	21	14	17	24
Foreign languages	4	4	10	5	1	2	3	2	1	1	3
English	9	6	18	9	8	11	9	9	8	8	9
Philosophy	3	2	5	4	2	2	2	2	1	2	3
Theology	1	(2)	3	1	(2)	1	(2)	2	(2)	(2)	2
Arts	6	3	24	4	2	8	5	6	4	6	7
Social sciences	23	12	18	49	24	19	22	19	16	16	21
Business	7	1	1	2	35	1	2	3	3	7	8
Education	7	1	4	3	1	31	2	11	3	3	4
Other	17	9	9	10	11	14	34	37	40	35	19
Sample size	4,440	625	409	700	694	757	690	21	198	107	239

[1]In semester hours.
[2]Less than 1 credit or 0.5 percent.
Note.—Details may not add to total because of rounding.
SOURCE: U.S. Department of Education, Office of Educational Research and Improvement, Center for Statistics, Transcript Study of the National Longitudinal Survey of the High School Class of 1972.

Table 2.—Average number and percent of course credits taken for bachelor's degrees in courses, by students' major field of study

Courses	Student's major field of study								
	Engineering	Computers	Life sciences	Physical sciences	Mathematics	Foreign languages	English	Philosophy and theology	Arts
	(Number of credits)								
Total[1]	137	127	125	127	128	123	122	124	128
Quantitative, total	94	73	73	78	66	12	11	10	8
Mathematics	19	21	9	15	39	4	3	3	2
Life sciences	1	2	36	10	4	3	3	3	3
Physical sciences	20	9	27	51	17	4	4	4	3
Engineering	52	9	(2)	1	1	(2)	1	(2)	(2)
Computers	2	32	1	1	5	1	(2)	(2)	(2)
Humanities, total	12	16	22	21	28	74	65	75	86
Foreign languages	1	2	6	6	6	47	9	8	5
English	7	8	8	8	11	13	40	12	11
Philosophy	2	2	3	3	3	5	5	19	3
Theology	(2)	1	1	(2)	1	1	1	21	0
Arts	2	3	4	4	7	8	10	15	67
Social sciences	13	16	18	16	19	22	27	25	16
Business	2	7	1	1	2	3	1	1	1
Education	1	(2)	1	2	8	6	6	3	5
Other	16	15	10	9	6	7	12	10	12
	(In percent)								
Total	100	100	100	100	100	100	100	100	100
Quantitative, total	69	57	58	62	51	10	9	8	6
Mathematics	14	16	7	12	31	4	3	3	1
Life sciences	1	2	29	8	3	3	3	2	3
Physical sciences	14	7	21	40	13	3	3	3	2
Engineering	38	7	0	1	(2)	(2)	(2)	(2)	(2)
Computers	2	25	1	1	4	(2)	(2)	(2)	(2)
Humanities, total	9	12	18	16	22	60	53	61	67
Foreign languages	1	2	5	4	4	38	7	6	4
English	5	6	6	6	9	11	33	10	9
Philosophy	1	2	3	2	3	4	4	16	2
Theology	(2)	(2)	1	(2)	1	1	1	17	(2)
Arts	1	2	3	3	5	6	8	12	52
Social sciences	9	13	14	13	14	18	22	20	13
Business	1	5	1	1	2	2	1	1	(2)
Education	(2)	(2)	1	1	6	4	5	2	4
Other	12	12	8	7	5	6	10	8	10
Sample size	188	24	249	112	52	61	149	62	137

[1]In semester hours.

[2]Less than 1 credit or 0.5 percent.

Note.—Details may not add to total because of rounding.

SOURCE: U.S. Department of Education, Office of Educational Research and Improvement, Center for Education Statistics, Transcript Study of the National Longitudinal Survey of the High School Class of 1972.

Table 3. – Standard errors of the average numbers of credits taken for bachelor's degrees in courses, by student's major fields of study

Courses	Total	Students' major field of study									
		Quantitative	Humanities	Social science	Business	Education	Other academic	Personal development	Academic Vocational	Vocationally oriented	Unclassified
		(Number of credits)									
Total	0.34	0.97	1.02	0.80	0.78	0.82	0.92	4.82	1.34	2.31	1.78
Quantitative, total	.42	.95	.40	.47	.41	.43	.89	1.16	1.35	1.89	1.76
Mathematics	.12	.45	.21	.19	.22	.19	.18	.51	.30	.56	.54
Life sciences	.16	.72	.18	.21	.14	.20	.04	1.05	.79	.74	.69
Physical sciences	.19	.69	.21	.25	.18	.22	.42	.54	.52	.74	.73
Engineering	.17	1.02	.05	.06	.11	.03	.11	–	.23	.96	.71
Computers	.05	.30	.03	.08	.12	.05	.05	.12	.10	.23	.25
Humanities, total	.34	.47	1.15	.53	.32	.71	.60	2.37	.76	2.01	1.74
Foreign languages	.13	.26	.85	.26	.16	.21	.25	.94	.26	.36	.52
English	.14	.20	.84	.24	.18	.31	.33	1.15	.40	.39	.58
Philosophy	.07	.14	.46	.18	.13	.12	.15	.53	.18	.33	.33
Theology	.09	.08	.63	.16	.06	.14	.08	1.21	.14	.19	.85
Arts	.23	.22	1.61	.27	.14	.58	.30	1.15	.48	1.77	1.08
Social sciences	.28	.35	.63	.61	.38	.44	.63	1.94	.70	1.00	1.02
Business	.26	.14	.17	.24	.51	.14	.25	1.55	.44	1.07	1.18
Education	.25	.22	.45	.29	.14	.65	.28	2.66	.62	1.01	.80
		(Number of credits)									
Total		1.60	6.34	1.46	2.36	3.52	2.70	1.62	2.24	1.91	
Quantitative, total		1.55	5.48	1.17	2.27	3.41	1.27	.64	.88	.66	
Mathematics		.47	2.17	.31	.78	1.93	.68	.36	.51	.26	
Life sciences		.21	.69	.70	1.02	.77	.56	.26	.42	.33	
Physical sciences		.95	1.30	.63	1.45	1.94	.62	.34	.53	.33	
Engineering		1.38	2.70	.05	.37	.29	.02	.12	–	.04	
Computers		.18	2.48	.10	.16	.89	.10	.05	.11	.04	
Humanities, total		.58	1.69	.70	1.02	2.26	2.15	1.58	2.54	2.20	
Foreign languages		.27	.98	.43	.62	1.09	1.18	.84	1.12	.66	
English		.32	.66	.31	.43	1.10	1.20	1.10	.79	.61	
Philosophy		.19	.94	.25	.33	.53	.75	.48	1.86	.34	
Theology		.08	.10	.15	.19	.40	.31	.28	3.14	.11	
Arts		.24	.82	.26	.47	1.82	1.21	.88	2.79	.22	
Social sciences		.49	1.95	.58	.85	1.26	1.59	1.03	1.93	.77	
Business		.21	1.69	.15	.26	.47	.85	.22	.31	.17	
Education		.39	.33	.26	.43	1.92	1.13	.81	.87	.76	

– Not Applicable.